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Effectiveness of Dairy Extension

A Study of 192 Dairy Farms in Mercer, Hunterdon, and Warren Counties, N. J., 1926

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M. C. Wilson[1] and A. M. Hulbert[2]

PURPOSE OF STUDY

This detailed study of extension work in a single subject-matter field was undertaken for the purpose of:

(1) Obtaining reliable information regarding the practices followed by farmers.

(2) Determining the comparative effectiveness of methods employed in teaching subject matter to farmers.

(3) Bringing out the possibilities of boys' and girls' club work as a means of influencing adult farmers to adopt improved practices.

It was also felt that a detailed study of a single project would carry the information brought out in the rather general study of extension made in 1925* somewhat further and add materially to the scientific data available to extension workers interested in increasing their effectiveness. The dairy project was selected because of its wide application throughout the State, the range of methods employed in dairy extension, and the emphasis which has been placed upon dairy-calf club work.

PLAN AND SCOPE OF STUDY

The data were collected by the survey method, the farmers in typical dairy sections being personally interviewed by representatives of the State or Federal extension services. Interviews were also held with the boys and girls enrolled or previously enrolled in junior dairy clubs. The Pleasant Valley community in Mercer County, the Mount Airy community in Hunterdon County, and the Changewater and Roxburg communities in Warren County were included in the study. A total of 207 farm records were obtained, but as 15 of these farms had no dairy animals they have been excluded from the tabulations. Information was also obtained regarding 78 present and former dairy-club members.

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*Baker, H. J. and Wilson, M. C. - Local Leadership and the Effectiveness of Extension Work in Reaching Rural People. N. J. Extension Bulletin 50.

ORGANIZATION OF DAIRY EXTENSION IN NEW JERSEY

The dairy extension project is organized in the same way as other subject-matter lines of work. The work in the counties is handled by the local agricultural, and boys' and girls' club agents. The efforts of the county worker are guided by a full-time subject-matter specialist located at the State agricultural college. An assistant specialist is employed to assist the county workers with junior dairy work. There is no marked differentiation between junior and adult dairy extension, however, since the county club agents work with dairy farmers as well as with boys and girls, and the county agricultural agents work with juniors as well as adults.

History of Dairy Extension in Areas

A county agricultural agent has been employed in Mercer County since 1912 and a county club agent since 1919. A county club agent and a county agricultural agent have been employed in Warren County since 1919. Hunterdon County has never had a resident extension agent, though for the last year or two a county club agent at large for the State has done considerable club work in the county.

Although dairy extension work has been conducted in a county-wide way in Mercer County since a county agent was first appointed, the Pleasant Valley community was not reached in an organized way until 1921, when a purebred dairy-calf club with 14 members was organized. This junior dairy club has continued to grow in size and influence. Adult extension work in dairying has largely centered around the junior dairy work. The dairy club sponsors a community fair each year at which its animals are exhibited in competition. In cooperation with other dairy clubs of the county, the Pleasant Valley club has sponsored a county-wide dairy show.

Mount Airy community in Hunterdon County joins the Pleasant Valley community. Originally the dairy-club members belonged to the Pleasant Valley club. With increased interest and enlarged area represented by the club members, it became desirable to form a Mount Airy dairy club.

The Changewater dairy club in Warren County, with seven members, was organized in 1921. The Roxburg club was organized two or three years later. Although neither of these clubs has been so aggressive as the Pleasant Valley club in Mercer County, all of the dairy extension work in these communities has been largely centered around the junior dairy clubs.

GENERAL INFORMATION REGARDING FARMS STUDIED

The 192 farms included in the study averaged 12.8 dairy animals per farm (Table 1). Sixty-six per cent of the farms were operated by the owners while 34 per cent were operated by tenants. Children of club age (10 to 20 years) were found at home on 54 per cent of the farms. One boy or girl in four of club age was or had been in dairy-club work. These boys and girls came from about one-sixth of the farms. Dairy extension activities had been conducted on 20 per cent of the farms. Adult leaders of junior dairy clubs

had been contributed from 5 per cent of the farms. The number of farms with junior extension activities was about three times as great as the number of farms with adult extension activities. This was also true of the local leaders of junior work as compared to local leaders of adult dairy extension. Thirty per cent of the dairymen were members of milk-marketing associations, - the Dairymen's League or the Interstate Milk Producers. Less than 4 per cent were members of cow-testing associations, and less than 3 per cent members of breed organizations.

Table 1. - General information pertaining to dairy farms studied

Item	All farms	
	Number	Percentage
Farm records obtained	192	100
Average number dairy animals	12.8	---
Farms operated by owners	126	66
Farms operated by tenants	66	34
Farms with children 10 to 20 years	103	54
Children per farm with children (10 to 20 years)	2.4	---
Farms contributing local leaders	10	5.2
Farms contributing local leaders - adult work	3	1.6
Farms contributing local leaders - junior work	9	4.7
Farms with extension activities on farm	38	19.8
Farms with adult extension activities on farm	12	6.2
Farms with junior extension activities on farm	34	17.7
Farms with boys or girls in dairy clubs	30	15.6
Percentage of boys and girls 10 to 20 in dairy clubs	--	24.1
Members of milk-marketing associations	58	30.2
Members of cow-testing associations	7	3.6
Members of breed associations	5	2.6

Practices Being Followed by Dairymen

As a background upon which to build future dairy extension programs, information was obtained regarding the present dairy situation on all the farms visited.

Breeding, feeding, and disease. - Twenty-two per cent of all dairy animals kept were purebred (Table 2). These were found on 46 per cent of the farms, the percentage of farms with purebreds being much greater where larger numbers of dairy animals were kept. Two-thirds of the farms keeping more than 12 dairy animals used a purebred sire. Calves were raised to build up or maintain the dairy herds on one-fourth of the farms with 1 to 4 animals, on two-thirds of the farms with 5 to 12 animals, and on four-fifths of the farms with 13 or more animals. The number of calves raised each year was 2.7 per farm.

The keeping of records of production was practiced on approximately 1 farm in 4 where more than 12 animals were kept, and on 1 farm in 12 where 5 to 12 dairy animals were kept. The feeding of grain according to production records was a much more common practice where dairying was conducted on a large scale. The tuberculin testing of dairy animals was being followed by three dairymen out of five regardless of the size of the dairy herd.

Table 2. - Breeding and feeding practices followed on diary farms

Practice	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Average number of dairy animals	12.8	2.5	8.8	19.7
Percentage of farms with some purebred animals	46.4	18.2	36	64.3
Percentage of animals purebred	21.8	21.8	9.5	27.5
Percentage of farms using purebred bull	53.6	9.1	51.2	67.9
Percentage of farms raising calves	67.2	27.3	66.3	78.6
Average number of calves raised yearly	2.7	1.3	2.0	3.4
Percentage of farms keeping production records on cows	14.1	--	8.1	23.8
Percentage of farms feeding grain according to production	21.9	4.5	19.8	28.6
Percentage of farms testing herds for tuberculosis	59.4	54.5	55.8	64.3

Legumes grown. - The growing of some kind of leguminous roughage was the practice on four-fifths of the farms, this practice being somewhat more common on the larger than on the smaller dairy farms (Table 3). Alfalfa, although a comparatively new crop, was grown to a greater or lessor extent on nearly half of the farms. Red clover was the next more common legume grown. Soy beans were grown on nearly one-fourth of the farms with more than 12 dairy animals.

Table 3. - Kinds of legumes grown on dairy farms

Legumes	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Percentage of farms growing any legume	78.1	50.0	75.6	88.1
Percentage of farms growing alfalfa	42.7	31.8	40.7	47.6
Percentage of farms growing red clover	32.8	27.3	29.1	38.1
Percentage of farms growing alsike clover	13.0	9.1	16.3	10.7
Percentage of farms growing sweet clover	13.0	4.5	16.3	11.9
Percentage of farms growing soy beans	14.1	4.5	7.0	23.8
Percentage of farms growing mixed clover	3.1	---	3.5	3.6

Dairy equipment. - The silo ordinarily considered a most important adjunct to successful dairying, was found on but one farm out of five where dairying was being conducted on the largest scale. Where less than 13 dairy animals were kept but 1 farm out of 12 was equipped with a silo (Table 4). Individual drinking cups, bull pens, ventilating systems, and litter carriers were found with about the same frequency as silos. Concrete floors, adequate light, and stanchions were common dairy barn equipment, though 1 farm in 6 with more than 12 dairy animals was without stanchions.

Table 4. - Equipment on dairy farms

Equipment	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Percentage of farms with silos	12.5	9.1	7.0	19.0
Percentage of dairy barns with concrete floors	55.7	22.7	43.0	77.4
Percentage of barns with drinking cups	10.4	9.1	1.2	20.2
Percentage of barns with bull pens	13.0	4.5	4.7	23.8
Percentage of barns with ventilating systems	10.9	13.6	5.8	15.5
Percentage of barns with litter carriers	7.8	9.1	1.2	14.3
Percentage of barns with 4 square feet light per animal	56.3	50.0	51.2	64.3
Percentage of barns with stanchions	64.6	27.3	55.8	83.3

INFLUENCE OF EXTENSION UPON DAIRY PRACTICES

That extension work had influenced dairymen to adopt improved dairy practices was reported by 58 per cent of them (Table 5). As would naturally be expected, the influence of extension was greater in the larger dairies than where only a few animals were kept to supply the home. The influence of extension in enabling them to grow alfalfa was reported by more dairymen than any other dairy practice (Table 6). The use of better rations and feeding according to production was next in order of frequency, followed by tuberculin testing, keeping of purebred stock, use of purebred sires, and the keeping of dairy records. The growing of soy beans and sweet clover was also credited to extension influence by a number of farmers.

Table 5. - Improved dairy practices adopted due to extension

Item	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farm records obtained..	192	22	86	84
Percentage of farms adopting dairy practices.....	58.3	40.9	54.6	66.7
Average number of practices adopted per farm.....	1.9	1.3	1.7	2.1
Number of practices adopted per 100 farms.....	110.9	54.5	94.2	142.8

Table 6. - Practices adopted by dairy farmers as result of extension effort

Practice	Number of farmers adopting practice	Percentage of all dairy farmers
Alfalfa.....	51	26.6
Dairy feeding.....	39	20.3
Tuberculin testing.....	27	14.1
Purebred stock.....	24	12.5
Use of purebred sire.....	18	9.4
Dairy records.....	16	8.3
Soy beans.....	14	7.3
Sweet clover.....	13	6.8
Miscellaneous.....	11	5.7
Total.....	213	58.3

Influence of Methods Upon Adoption of Practices

Whenever it was found that a dairyman had adopted some improved practice resulting from extension teaching, an effort was made to determine which of the means and agencies employed in extension teaching had in any way been

responsible. A note was also made as to whether the methods reported as having had an influence were in connection with adult or junior extension activities. This differentiation is not entirely satisfactory since the club agents did considerable work with adults in connection with placing of purebred sires, testing for tuberculosis, and the like, which is listed under "junior extension."

Personal visits to the farm by the county agent, club agent, or dairy specialist were reported as the greatest influence in bringing about the adoption of better dairy practices (Table 7), followed by general meetings, indirect, bulletins, and result demonstrations. News stories and office calls were also important methods.

Junior result demonstrations were apparently much more effective than adult result demonstrations, but it must be remembered that areas were selected where outstanding dairy-club work had been done by boys and girls. General meetings were of about the same effectiveness, whether conducted by the county agent or the club agent. This was also true of news stories and farm visits. The bulletins distributed were written primarily for adults. Indirect spread of influence was nearly twice as great for adult extension as for junior extension.

Table 7. - Relative frequency with which methods were reported in connection with practices adopted

Method	All extension*		Adult extension		Junior extension	
	Number of practices	Percentage of all practices	Number of practices	Percentage of all practices	Number of practices	Percentage of all practices
Method demonstrations	2	.9	--	--	2	.9
Result demonstrations	28	13.1	3	1.4	25	11.7
General meetings	70	32.9	36	16.9	37	17.4
News stories	12	5.6	11	5.2	7	3.3
Bulletins	47	22.1	47	22.1	--	---
Circular letters	5	2.3	5	2.3	--	---
Exhibits	4	1.9	--	--	4	1.9
Farm visits	87	40.8	54	25.4	48	22.5
Office calls	11	5.2	10	4.7	1	.5
Correspondence	--	---	--	--	--	---
Leader-training meetings	--	---	--	--	--	---
Telephone calls	--	---	--	--	--	---
Indirect	57	26.8	40	18.8	21	9.8

*Both adult and junior extension methods were frequently involved in the adoption of a single practice.

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It is interesting to compare the effectiveness of the different methods in influencing the adoption of practices related to dairying by the 192 farms included in this study with similar information obtained regarding the adoption of practices involving all lines of agriculture, by the 621 other farms studied in 1925* (Table 8). Farm visits, indirect, bulletins, office calls, and exhibits were reported with approximately the same frequency in connection with dairy practices, and practices involving all lines of agriculture. Method demonstrations, adult result demonstrations, circular letters, and news stories were less effective in influencing adoption of dairy practices than in all lines of agriculture. On the other hand, general meetings and junior result demonstrations were more effective. Considering the nature of dairy practices as compared to other subject-matter lines and the emphasis placed on dairy-club work in the areas included in the dairy study, the results of these two studies are about as consistent as could be expected.

Table 8. - Comparison between dairying and all lines of agriculture

Method	313 practices related to dairying	860 practices all phases agriculture*
Method demonstration	.9	11.4
Adult result demonstration	1.4	17.6
Junior result demonstration	11.7	5.2
General meeting	32.9	11.3
News story	5.6	18.8
Bulletin	22.1	18.8
Circular letter	2.3	9.8
Exhibit	1.9	1.5
Farm visit	40.8	39.0
Office call	5.2	4.8
Correspondence	---	6.9
Leader-training meeting	---	---
Telephone call	---	1.7
Indirect	26.8	22.9

*From a study of 621 farms in Middlesex, Mercer, and Morris Counties, N. J., 1925. New Jersey Extension Bulletin 50, Local Leadership and the Effectiveness of Extension in Reaching Rural People. - H. J. Baker and M. C. Wilson.
Note:-The adoption of a single practice may have resulted from the influence of several extension methods.

EXPOSURES AND TAKES

In the foregoing discussion of the effectiveness of methods in influencing the adoption of improved dairy practices, the relative emphasis as placed upon the different extension methods by extension workers has not been considered. To throw light on this problem, information was obtained from dairymen regarding the different means and agencies employed in dairy extension to which they had been exposed. If a dairy farmer had seen an extension dairy exhibit or had had a visit from an extension agent to discuss dairy problems, this fact was noted on the record. The farmers interviewed also stated from which of the teaching methods to which they were exposed, information was obtained that was actually used in modifying their dairy practices.

Table 9. - Comparative effectiveness of extension methods, dairy project
(Adult and junior extension combined)

Method	Percentage of dairy farmers exposed to methods	Percentage of those exposed influenced	Percentage of all farmers influenced by methods
Method demonstration....	23.4	4.4	1.0
Result demonstration....	33.3	25.0	8.3
General meeting.....	52.6	42.6	22.4
News story.....	68.2	7.6	5.2
Bulletin.....	66.7	28.1	18.7
Circular letter.....	59.9	4.3	2.6
Exhibit.....	70.8	2.9	2.1
Farm visit.....	58.3	45.5	26.6
Office call.....	19.8	26.3	5.2
Correspondence.....	22.4	---	---
Leader training.....	3.1	----	---
Telephone.....	8.3	---	---
Indirect.....	41.1	51.9	21.4
Total all methods.....	91.7	63.6	58.3

Column 1, Table 9, gives the percentages of farmers exposed to the different diary extension methods. Column 2, same table, shows the percentages of those exposed to the various methods who were influenced by them to adopt improved dairy practices. Approximately one farmer out of two reached through farm visits, general meetings, and indirectly, was influenced by those methods. This was true of but one farmer out of four reached by office calls, bulletins, and result demonstrations. Out of 34 farmers seeing dairy extension exhibits but 1 obtained information from exhibits that was used. In the case of circular letters this proportion is 1 out of 23, and news stories 1 out of 13. Possibly the character of the dairy exhibits, news stories, and circular letters has not been such as to carry the extension message, or dairy subject matter may not lend itself satisfactorily to the use of these methods. The question whether farmers go to places where exhibits are made for the purpose of obtaining subject-matter information or for entertainment might also be raised.

The percentages of all farmers influenced by the various methods are given in column 3. Considering the exposures, and the percentages of exposures which took, the methods that stand out as having effectively reached farmers are, farm visits, general meetings, indirect, and bulletins. Exhibits which were seen by more people than received bulletins had only one-ninth the influence of bulletins owing to a lower degree of effectiveness. The relationship of "exposures" and "takes" is forcefully brought out in fig. 1.

Dairy and Alfalfa Projects Compared

The only other data with which to compare the information on exposures and takes in the dairy project are from a similar study of the alfalfa project in Wisconsin in 1925.* As would naturally be expected, the percentages of farmers exposed to the various methods used in alfalfa and dairy extension varied widely owing to differences in subject matter and the emphasis placed upon different extension methods in the two States (Table 10). The proportion of exposures which took is remarkably similar, however, in a large number of cases. General meetings, bulletins, farm visits, and indirect seem to have been of about equal effectiveness whether employed in forwarding alfalfa in Wisconsin or dairying in New Jersey. Method demonstrations, result demonstrations, news stories, and circular letters were less effective in dairy extension than in alfalfa extension. Office calls were more effective. Exhibits were equally ineffective in both cases.

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*Wilson, M. C. and Clark, W. W. - Make Extension More Effective, Wisconsin Bulletin 387.

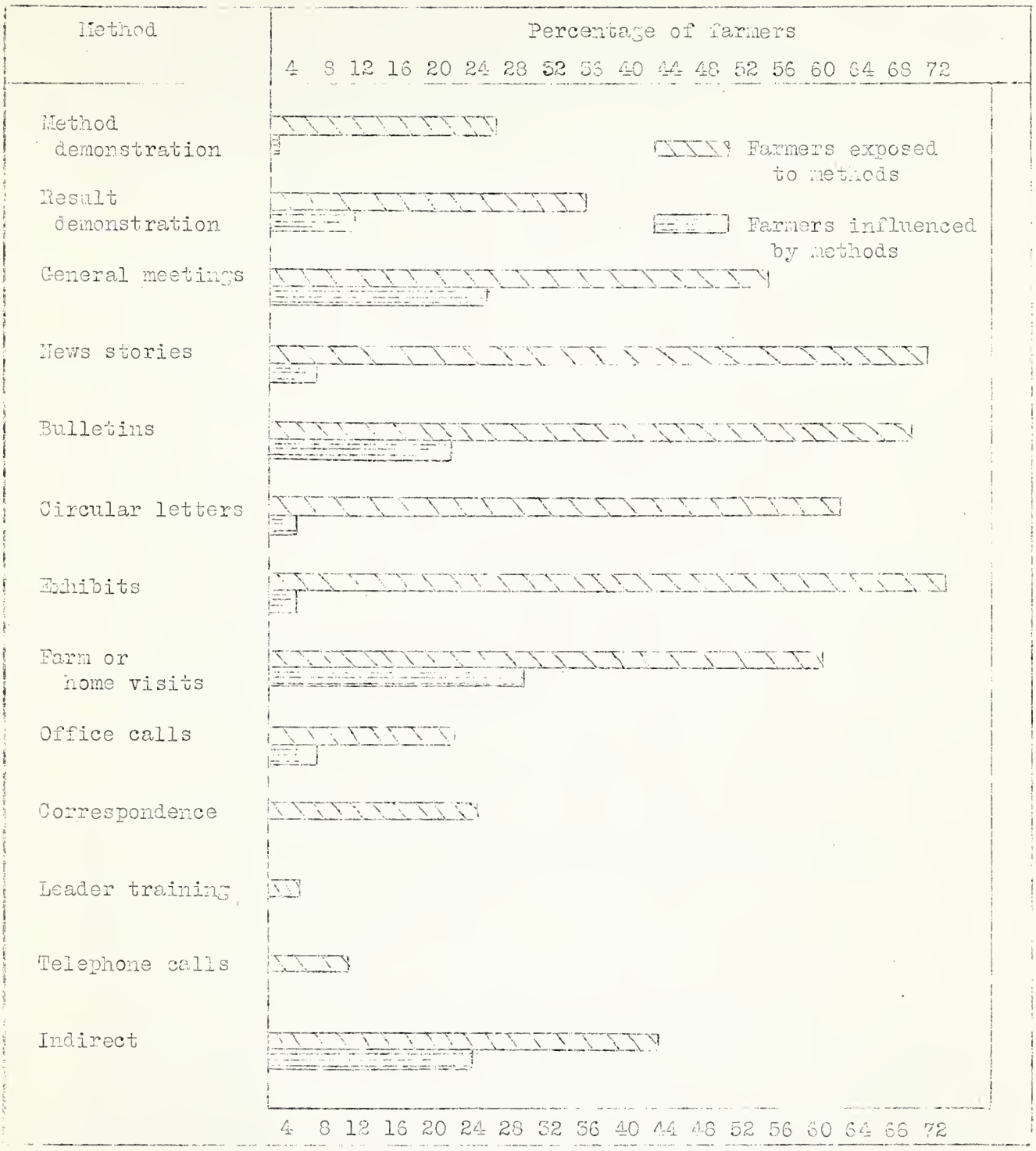

Fig. 1. - Comparative effectiveness of extension methods, dairy project, 192 dairy farmers, New Jersey, 1926

Table 10. - Comparative effectiveness of extension methods
Dairy project, N. J.[1] - Alfalfa project, Wisc.[2]

Method	Percentage farmers exposed to methods		Percentage exposed who were influenced		Percentage farmers influenced by method	
	Alfalfa	Dairy	Alfalfa	Dairy	Alfalfa	Dairy
Method demonstrations....	3	23	17	4	0.5	1
Result demonstrations....	16	33	61	25	10	8
General meetings.....	70	53	75	43	52	22
News stories..	60	68	44	8	26	5
Bulletins.....	40	67	37	28	15	19
Circular letters.....	24	60	20	4	5	3
Exhibits.....	5	71	5	3	0.2	2
Farm visits...	8	58	46	46	4	27
Office calls..	5	20	13	26	0.6	5
Correspondence	6	22	8	--	0.5	--
Telephone.....	1	8	--	--	--	--
Indirect.....	40	41	56	52	22	21

[1] 192 dairy farmers, N. J. - 1926
[2] 424 alfalfa growers, Wisc. - 1925

Adult and Junior Extension Work Compared

It is of interest to compare the methods on the basis of whether employed by the club agent working primarily with juniors, or by the county agent working principally with adults - Table 11. Farm visits are equally effective whether made by county agent or club agent. This was also true of general meetings, news stories, and indirect. Office calls were more effective when related to adult extension. On the other hand, result demonstrations seem to have been more effective when conducted by boys and girls under the direction of the club agent than when conducted by farmers under the direction of the county agent. Considering

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all extension methods, about the same number of farmers were exposed to adult and junior extension activities. Adult extension methods were approximately 40 per cent more effective, however, than the same methods when employed in junior extension.

In this study no attempt has been made to determine the relative cost of the various extension methods and of club agent work as compared to county agent work. The question of costs is an important one and one which should be considered in further studies dealing with the comparative efficiency of the means and agencies employed in extension teaching.

Table 11. - Comparison of extension methods - adult extension versus junior extension

Method	Percentage of dairy farmers exposed to method		Percentage of those exposed influenced		Percentage of all farmers influenced by method	
	Adult extension	Junior extension	Adult extension	Junior extension	Adult extension	Junior extension
Method demonstration	12.5	22.9	---	4.5	---	1.0
Result demonstration	15.1	29.7	13.8	24.6	2.1	7.3
General meeting	59.6	38.0	35.5	35.6	14.1	13.5
News story	58.9	44.8	8.0	6.9	4.7	3.1
Bulletin	64.1	18.7	29.3	---	18.7	---
Circular letter	54.7	26.0	4.8	---	2.6	---
Exhibit	33.9	67.7	---	3.1	---	2.1
Farm visit	48.4	43.7	41.9	35.7	20.3	15.6
Office call	18.2	12.0	25.7	4.3	4.7	0.5
Correspondence	18.7	13.5	---	---	---	---
Leader training	1.6	3.1	---	---	---	---
Telephone call	6.2	6.8	---	---	---	---
Indirect	33.3	25.0	50.0	35.4	16.7	8.8
Total all methods	84.9	79.7	57.7	41.8	49.0	33.3

OTHER AGENCIES RELIED UPON FOR ASSISTANCE

Among the various agencies other than extension relied upon for information and assistance with dairy problems - farm papers stand at the head of the list with 57 per cent of the dairymen involved. Although a goodly number of both local and national papers were reported, the papers most commonly mentioned were those published near-by. Assistance from milk dealers, neighbors, feed dealers, cooperative marketing associations, and salesmen of farm supplies was also reported, but in no case were more than 3 per cent of the farmers involved.

DAIRY-CLUB MEMBERS

The 78 present and former dairy-club members found on the 192 farms studied, came from 30 homes. Fifty-six were boys and 22 girls. All but four of the boys owned dairy animals at the time the data were collected. A total of 133 animals were owned by these 74 boys and girls. The growth in membership in dairy clubs is shown by fig. 2. Starting with four club members in 1918 the number has steadily increased until in 1926 there were 63. The average age of the 1926 club members was between 16 and 17 years, the youngest being 9, and the oldest 28 years. Approximately 40 per cent of the 1926 club members were not in school. The average length of time dairy projects have been carried on is 3.8 years, considering former as well as present club members.

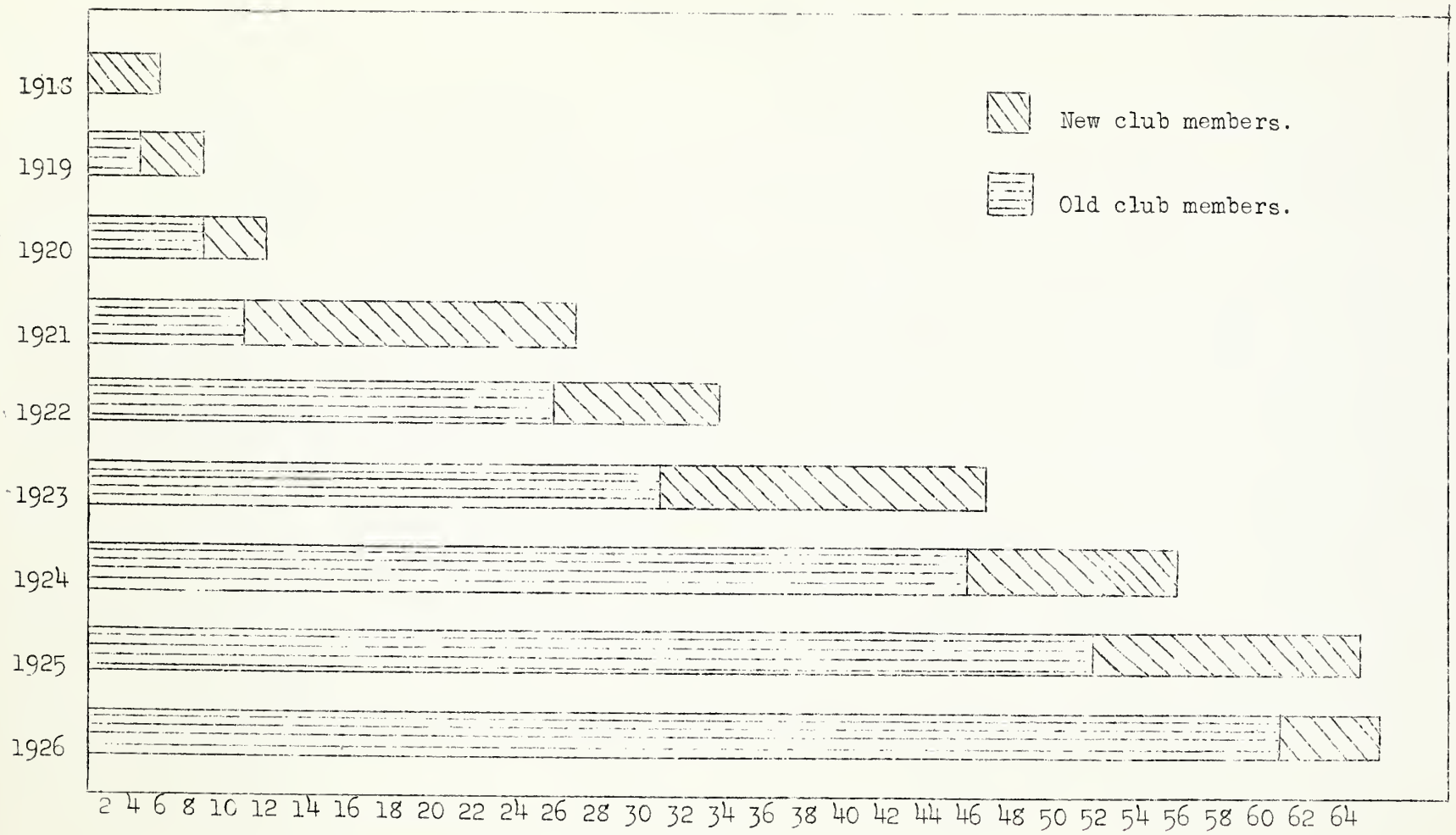

Fig. 2 - Growth in dairy-club membership

More than half of the dairy-club members were enrolled through the efforts of the club agent (Table 12). About one-sixth each were obtained by the volunteer club leader, or joined because a brother was already in a dairy club. The remainder enrolled as the result of discussion at school and suggestions by neighbors, or through news items regarding club work carried in the local press.

Table 12. - How influenced to join clubs

Agency	Number club members reporting	Per cent of all club members
Club agent	41	52.6
Local leader	14	17.9
Brother	12	15.4
School	3	3.8
Neighbor	2	2.6
News item	2	2.6
No record	4	5.1

Phases of Dairying Emphasized

Although all dairy-club members were given some instruction in nearly all phases of dairying, certain phases of dairying were emphasized more in some clubs than in others. In addition, the interest of the individual club member naturally affected the part taken in the various dairy activities. According to the information furnished by the club members themselves (Table 13), the keeping of records and the feeding of the dairy animals received greatest attention. The care and management of calves, breeding, learning to test milk for butterfat content, and showing in competition were other phases of dairying which received much emphasis.

Table 13. - Phases of dairying emphasized by club members

Phase of dairying	Number club members reporting	Percentage of all club members
Dairy records	34	43.6
Feeding	32	41.0
Calf rearing	16	20.5
Breeding	13	16.7
Testing milk	10	12.8
Showing	8	10.3
Growing legumes	6	7.7
Judging	2	2.6

Exhibits and Demonstration Teams

As indicated in Table 14, 64 per cent of the club members had exhibited their dairy animals locally, 38 per cent at some county-wide event, and 22 per cent in state-wide competition. More than 1 club member out of 4 had been a member of a dairy demonstration team, 9 per cent demonstrating locally, 14 per cent at a county-wide activity, and 9 per cent at a State activity.

Table 14. - Exhibits and demonstration teams

	Exhibits made		Demonstration teams	
	Number members	Percentage	Number members	Percentage
Local	50	64.1	7	9.0
County	30	38.4	11	14.1
State	17	21.8	7	9.0
Any	66	84.6	22	28.2

Responsibility for directing the affairs of the dairy clubs had been participated in by 18 of the 78 club members.

The club members interviewed were asked to state the features about dairy-club work which they liked and disliked. The dislikes were so few in number and but one or two of a kind that the information is of little value. The things that the club members said they liked about dairy-club work are listed in Table 15. Exhibiting dairy animals in competition heads the list followed by social activities such as meetings and tours. Learning how to care for and manage dairy animals, and the keeping of records were also frequently mentioned. The young dairy calves made a strong appeal to 6 per cent of the members.

Table 15. - What members like about dairy-club work

	Number club members reporting	Percentage all club members
Showing animals	28	35.9
Meetings and tours	17	21.8
Dairy information	14	17.9
Record keeping	10	12.8
Young animals	5	6.4

SUMMARY

The study included 192 dairy farms and 78 junior dairy-club members in four New Jersey communities.

The average number of dairy animals kept was 12.8. About one-fourth of the dairy animals were purebred, being reported on 46.4 per cent of the farms.

One dairyman in seven keeps records of production of his cows. Three dairymen in five have their herds tested for tuberculosis. Approximately four-fifths of the dairy farmers grow leguminous roughages, but one dairyman in eight has a silo.

Concrete floors were found in more than half of the dairy barns. Individual drinking cups were found in 10 per cent of them.

That extension had influenced the adoption of improved dairy practices was reported by 58.3 per cent of the farmers interviewed.

The chief extension methods responsible for the adoption of the improved dairy practices were farm visits, general meetings, indirect spread of influence, bulletins, and result demonstrations.

Nearly 50 per cent of the farmers having farm visits, attending general meetings, or talking with neighbors who had adopted improved practices, reported the practical use of the dairy information obtained in these ways. This was true of approximately 25 per cent of the dairymen receiving bulletins, making office calls, or visiting result demonstrations in dairying.

Though more farmers saw dairy exhibits than received dairy bulletins, yet nine times as many farms reported helpful information derived from bulletins as reported use of information obtained from exhibits.

Approximately the same percentage of farmers were exposed to adult and junior extension methods, but only two-thirds as many farmers were influenced by junior extension as by adult extension.

Of the 78 boys and girls ever in dairy-club work, 74 reported a total of 133 dairy animals owned by them.

The county club agents, local leaders, and other club members were largely responsible for the enrollment in dairy clubs.

Four out of 5 club members had exhibited dairy animals in competition; more than 1 out of 4 had been a member of a demonstration team; and nearly 1 out of 5 had held a club office.

Showing animals in competition, participating in club meetings and tours, knowledge of dairying acquired, and training in record keeping were the features of club work most liked by the dairy-club members.

A

No._____ Co._____ STUDY OF DAIRY PROJECT Date_____

Name_____ P. O. Address_____ Community_____
Owner_____ Tenant_____ No. children(10-20 yrs) Boys_____ Girls_____
Improved dairy practices followed
Number of dairy animals kept_____ No. purebred_____
Years used purebred sire_____ Number calves raised yearly_____
Leguminous roughages grown: Kind_____ No. Years_____
_____ Kind_____ No. Years_____
Are production records kept on milking cows?_____
For how many years?_____ How_____
Are cows fed grain according to production?_____ No. years_____
Has herd been tested for tuberculosis?_____ Year first tested_____
Approved equipment used: Silo_____ Concrete floor_____ Drinking cups___
Bull pen_____ Ventilating system_____ Litter carrier_____
Light (4 sq. ft. per animal)_____ Stanchions_____
Member of what dairy organizations (breed, marketing, etc.)_____
_____
Extension services of the New Jersey State College of Agriculture and of the United States Department of Agriculture cooperating.

Fig. 3-A. Obverse side of questionnaire card used in interviewing dairy farmers.

Check extension activities relating to dairying attended, or personal contacts with extension workers regarding dairying:-

	Adult (a)	Junior (jr)		Adult (a)	Junior (jr)
Result demonstrations (dem.)	____	____	Office calls (o.c.)	____	____
Method demonst. mtgs. (m.dem.)	____	____	Correspondence (cor.)	____	____
Leader-training mtg. (l.tr.)	____	____	Telephone calls (tel.)	____	____
General meetings (mtg.)	____	____	Bulletins (bul.)	____	____
Exhibits (exh.)	____	____	Circular letters (cir.l.)	____	____
Farm visits (f.v.)	____	____	News stories (n.s.)	____	____
			Indirect (ind.)	____	____

Leadership in dairy extension: Adult_____ Junior_____
Dairy extension activities on farm: Adult_____ Junior_____
List dairy practices adopted which were in any way due to influence of extension:

Practices	Extension methods involved	Ext. Agts. involved: C. A.	Club A.	Spec'l	Local leader involved

What agencies other than extension do you rely upon for assistance with dairy problems?_____
Other dairy problems with which assistance is desired_____
How has dairy extension benefited the community_____
Remarks_____

Fig. 3-B. Reverse side of questionnaire card used in interviewing dairy farmers.

4027

B Information Concerning Boys and Girls Who Have Conducted a Junior Dairy Project

Farm No._____Co._____Date_____
Name of parent_____Address_____Community_____

Name of club member----------	:	:
Present age----------	:	:
In school----------	:	:
Calendar years in dairy clubs------	:	:
Phase of dairying emphasized-------	:	:
How influenced to join a dairy club	:	:
	:	:
Why did you drop out?----------	:	:
	:	:
Number animals now owned----------	:	:
Office held in club, with years----	:	:
Exhibits made and prizes won:	:	:
Local----------	:	:
County----------	:	:
State----------	:	:
Member of a demonstration team:	:	:
Local----------	:	:
County----------	:	:
State----------	:	:

Fig. 4-A. Obverse side of questionnaire card used in interviewing dairy-club member

What changes in dairying have been made on farm as outgrowth of dairy club work_____	:	:
	:	:
How has dairy-club work improved dairying on neighboring farms_____	:	:
	:	:
What do you like about dairy-club work?_____	:	:
	:	:
What do you dislike about dairy-club work?_____	:	:
	:	:
Suggestions for the improvement of dairy-club work_____	:	:
	:	:

Remarks_____

Extension services of the New Jersey State College of Agriculture and of the United States Department of Agriculture cooperating.

Fig. 4-B. Reverse side of questionnaire card used in interviewing dairy-club member

Extension Service Circular 64 REVISED November 1927

EFFECTIVENESS OF DAIRY EXTENSION

A Study of 192 Dairy Farms in Mercer, Hunterdon, and Warren Counties, N. J., 1926

M. C. Wilson /1 and A. M. Hulbert /2

CONTENTS

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PURPOSE OF STUDY

This detailed study of extension work in a single subject-matter field was undertaken for the purpose of:

(1) Obtaining reliable information regarding the practices followed by farmers.

(2) Determining the comparative effectiveness of methods employed in teaching subject matter to farmers.

(3) Bringing out the possibilities of boys' and girls' club work as a means of influencing adult farmers to adopt improved practices.

It was also felt that a detailed study of a single project would carry the information brought out in the rather general study of extension made in 1925 /3 somewhat further and add materially to the scientific data available to extension workers interested in increasing their effectiveness. The dairy project was selected because of its wide application throughout the State, the range of methods employed in dairy extension, and the emphasis which has been placed upon dairy-calf club work.

PLAN AND SCOPE OF STUDY

The data were collected by the survey method, the farmers in typical dairy sections being personally interviewed by representatives of the State or Federal extension services. Interviews were also held with the boys and girls enrolled or previously enrolled in junior dairy clubs. The Pleasant Valley community in Mercer County, the Mount Airy community in Hunterdon County, and the Changewater and Roxburg communities in Warren County were included in the study. A total of 207 farm records were obtained, but as 15 of these farms had no dairy animals they have been excluded from the tabulations. Information was also obtained regarding 78 present and former dairy-club members.

ORGANIZATION OF DAIRY EXTENSION IN NEW JERSEY

The dairy extension project is organized in the same way as other subject-matter lines of work. The work in the counties is handled by the local agricultural, and boys' and girls' club agents. The efforts of the county worker are guided by a full-time subject-matter specialist located at the State agricultural college. An assistant specialist is employed to assist the county workers with junior dairy work. There is no marked differentiation between junior and adult dairy extension, however, since the county club agents work with dairy farmers as well as with boys and girls, and the county agricultural agents work with juniors as well as adults.

/3 Baker, H. J. and Wilson, M. C. - Local Leadership and the Effectiveness of Extension Work in Reaching Rural People, N. J. Extension Bulletin 50.

History of Dairy Extension in Areas

A county agricultural agent has been employed in Mercer County since 1912 and a county club agent since 1919. A county club agent and a county agricultural agent have been employed in Warren County since 1919. Hunterdon County has never had a resident extension agent, though for the last year or two a county club agent at large for the State has done considerable club work in the county.

Although dairy extension work has been conducted in a county-wide way in Mercer County since a county agent was first appointed, the Pleasant Valley community was not reached in an organized way until 1921, when a purebred dairy-calf club with 14 members was organized. This junior dairy club has continued to grow in size and influence. Adult extension work in dairying has largely centered around the junior dairy work. The dairy club sponsors a community fair each year at which its animals are exhibited in competition. In cooperation with other dairy clubs of the county, the Pleasant Valley club has sponsored a county-wide dairy show.

Mount Airy community in Hunterdon County joins the Pleasant Valley community. Originally the dairy-club members belonged to the Pleasant Valley club. With increased interest and enlarged area represented by the club members, it became desirable to form a Mount Airy dairy club.

The Changewater dairy club in Warren County, with seven members, was organized in 1921. The Roxburg club was organized 2 or 3 years later. Although neither of these clubs has been so aggressive as the Pleasant Valley club in Mercer County, all the dairy extension work in these communities has been largely centered around the junior dairy clubs.

GENERAL INFORMATION REGARDING FARMS STUDIED

The 192 farms included in the study averaged 12.8 dairy animals per farm (table 1). Sixty-six percent of the farms were operated by the owners and 34 percent were operated by tenants. Children of club age (10 to 20 years) were found at home on 54 percent of the farms. One boy or girl in four of club age was or had been in dairy-club work. These boys and girls came from about one-sixth of the farms. Dairy extension activities had been conducted on 20 percent of the farms. Adult leaders of junior dairy clubs had been contributed from 5 percent of the farms. The number of farms with junior extension activities was about three times as great as the number of farms with adult extension activities. This was also true of the local leaders of junior work as compared to local leaders of adult dairy extension. Thirty percent of the dairymen were members of milk-marketing associations - the Dairymen's League or the Interstate Milk Producers. Less than 4 percent were members of cow-testing associations, and less than 3 percent members of breed organizations.

Table 1. - General information pertaining to dairy farms studied

Item	All farms	
	Number	Percentage
Farm records obtained	192	100
Average number dairy animals	12.8	---
Farms operated by:		
Owners	126	66
Tenants	66	34
Farms with children 10 to 20 years	103	54
Children per farm with children (10 to 20 years)	2.4	---
Farms contributing:		
Local leaders	10	5.2
Local leaders, adult work	3	1.6
Local leaders, junior work	9	4.7
Farms with:		
Extension activities on farm	38	19.8
Adult extension activities on farm	12	6.2
Junior extension activities on farm	34	17.7
Boys or girls in dairy clubs	30	15.6
Percentage of boys and girls 10 to 20 in dairy clubs	--	24.1
Members of:		
Milk-marketing associations	58	30.2
Cow-testing associations	7	3.6
Breed associations	5	2.6

Practices Being Followed by Dairymen

As a background upon which to build future dairy extension programs, information was obtained regarding the present dairy situation on all the farms visited.

Breeding, feeding, and disease.

Twenty-two percent of all dairy animals kept were purebred (table 2). These were found on 46 percent of the farms, the percentage of farms with purebreds being much greater where larger numbers of dairy animals were kept. Two-thirds of the farms keeping more than 12 dairy animals used a purebred sire. Calves were raised to build up or maintain the dairy herds on 1/4 of the farms with 1 to 4 animals; on 2/3 of the farms with 5 to 12 animals; and on 4/5 of the farms with 13 or more animals. The number of calves raised each year was 2.7 per farm.

The keeping of records of production was practiced on approximately 1 farm in 4 where more than 12 animals were kept, and on 1 farm in 12 where 5 to 12 dairy animals were kept. The feeding of grain according to production records was a much more common practice where dairying was conducted

on a large scale. The tuberculin testing of dairy animals was being followed by three dairymen out of five regardless of the size of the dairy herd.

Table 2. - Breeding and feeding practices followed on dairy farms

Practice	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Average number of dairy animals	12.8	2.5	8.8	19.7
Percentage of:				
Farms with some purebred animals	46.4	18.2	36	64.3
Animals purebred	21.8	21.8	9.5	27.5
Farms using purebred bull	53.6	9.1	51.2	67.9
Farms raising calves	67.2	27.3	66.3	78.6
Average number of calves raised yearly	2.7	1.3	2.0	3.4
Percentage of:				
Farms keeping production records on cows	14.1	--	8.1	23.8
Farms feeding grain according to production	21.9	4.5	19.8	28.6
Farms testing herds for tuberculosis	59.4	54.5	55.8	64.3

Legumes grown.

The growing of some kind of leguminous roughage was the practice on four-fifths of the farms, this practice being somewhat more common on the larger than on the smaller dairy farms (table 3). Alfalfa, although a comparatively new crop, was grown to a greater or lesser extent on nearly half of the farms. Red clover was the next more common legume grown. Soybeans were grown on nearly one-fourth of the farms with more than 12 dairy animals.

Table 3. - Kinds of legumes grown on dairy farms

Legumes	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Percentage of farms growing any legume	78.1	50.0	75.6	88.1
Percentage of farms growing:				
Alfalfa	42.7	31.8	40.7	47.6
Red clover	32.8	27.3	29.1	38.1
Alsike clover	13.0	9.1	16.3	10.7
Sweetclover	13.0	4.5	16.3	11.9
Soybeans	14.1	4.5	7.0	23.8
Mixed clover	3.1	---	3.5	3.6

Dairy equipment.

The silo ordinarily considered a most important adjunct to successful dairying, was found on but 1 farm out of 5 where dairying was being conducted on the largest scale. Where less than 13 dairy animals were kept but 1 farm out of 12 was equipped with a silo (table 4). Individual drinking cups, bull pens, ventilating systems, and litter carriers were found with about the same frequency as silos. Concrete floors, adequate light, and stanchions were common dairy-barn equipment, though 1 farm in 6 with more than 12 dairy animals was without stanchions.

Table 4. - Equipment on dairy farms

Equipment	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farms	192	22	86	84
Percentage of:				
Farms with silos	12.5	9.1	7.0	19.0
Dairy barns with concrete floors	55.7	22.7	43.0	77.4
Barns with drinking cups	10.4	9.1	1.2	20.2
Barns with bull pens	13.0	4.5	4.7	23.8
Barns with ventilating systems	10.9	13.6	5.8	15.5
Barns with litter carriers	7.8	9.1	1.2	14.3
Barns with 4 square feet light per animal	56.8	50.0	51.2	64.3
Barns with stanchions	64.6	27.3	55.8	83.3

INFLUENCE OF EXTENSION UPON DAIRY PRACTICES

That extension work had influenced dairymen to adopt improved dairy practices was reported by 58 percent of them (table 5). As would naturally

Table 5. - Improved dairy practices adopted due to extension

Item	All farms	Number of dairy animals kept		
		1 to 4	5 to 12	13 and over
Number of farm records obtained	192	22	86	84
Percentage of farms adopting dairy practices	58.3	40.9	54.6	66.7
Average number of practices adopted per farm	1.9	1.3	1.7	2.1
Number of practices adopted per 100 farms	110.9	54.5	94.2	142.8

be expected, the influence of extension was greater in the larger dairies than where only a few animals were kept to supply the home. The influence of extension in enabling them to grow alfalfa was reported by more dairymen than was any other dairy practice (table 6). The use of better rations and feeding according to production was next in order of frequency, followed by tuberculin testing, keeping of purebred stock, use of purebred sires, and the keeping of dairy records. The growing of soybeans and sweetclover was also credited to extension influence by a number of farmers.

Table 6. - Practices adopted by dairy farmers as result of extension effort

Practice	Number of farmers adopting practice	Percentage of all dairy farmers
Alfalfa	51	26.6
Dairy feeding	39	20.3
Tuberculin testing	27	14.1
Purebred stock	24	12.5
Use of purebred sire	18	9.4
Dairy records	16	8.3
Soybeans	14	7.3
Sweetclover	13	6.8
Miscellaneous	11	5.7
Total	213	58.3

Influence of Methods Upon Adoption of Practices

Whenever it was found that a dairyman had adopted some improved practice resulting from extension teaching, an effort was made to determine which of the means and agencies employed in extension teaching had in any way been responsible. A note was also made as to whether the methods reported as having had an influence were in connection with adult or junior extension activities. This differentiation is not entirely satisfactory, since the club agents did considerable work with adults in connection with placing of purebred sires, testing for tuberculosis, and the like, which is listed under "junior extension."

Personal visits to the farm by the county agent, club agent, or dairy specialist were reported as the greatest influence in bringing about the adoption of better dairy practices (table 7), followed by general meetings, indirect, bulletins, and result demonstrations. News stories and office calls were also important methods.

Junior result demonstrations were apparently much more effective than adult result demonstrations, but it must be remembered that areas were selected where outstanding dairy-club work had been done by boys and girls. General meetings were of about the same effectiveness, whether conducted by the county agent or the club agent. This was also true of news stories

and farm visits. The bulletins distributed were written primarily for adults. Indirect spread of influence was nearly twice as great for adult extension as for junior extension.

Table 7. - Relative frequency with which methods were reported in connection with practices adopted

Method	All extension/1		Adult extension		Junior extension	
	Number of practices	Percentage of all practices	Number of practices	Percentage of all practices	Number of practices	Percentage of all practices
Method demonstrations...	2	0.9	--	--	2	0.9
Result demonstrations...	28	13.1	3	1.4	25	11.7
General meetings.....	70	32.9	36	16.9	37	17.4
News stories.	12	5.6	11	5.2	7	3.3
Bulletins....	47	22.1	47	22.1	--	--
Circular letters.....	5	2.3	5	2.3	--	--
Exhibits.....	4	1.9	--	--	4	1.9
Farm visits..	87	40.8	54	25.4	48	22.5
Office calls.	11	5.2	10	4.7	1	0.5
Correspondence	--	--	--	--	--	--
Leader-training meetings	--	--	--	--	--	--
Telephone calls.....	--	--	--	--	--	--
Indirect.....	57	26.8	40	18.8	21	9.8

/1 Both adult and junior extension methods were frequently involved in the adoption of a single practice.

It is interesting to compare the effectiveness of the different methods in influencing the adoption of practices related to dairying by the 192 farms included in this study with similar information obtained regarding the adoption of practices involving all lines of agriculture, by the 621 other farms studied in 1925/4 (table 8). Farm visits, indirect, bulletins, office calls, and exhibits were reported with approximately the same frequency in connection with dairy practices, and practices involving all lines of agriculture. Method demonstrations, adult result demonstrations, circular letters, and news stories were less effective in influencing adoption of dairy practices than in all lines of agriculture. On the other hand, general meetings and junior result demonstrations were more effective.

/4 From a study of 621 farms in Middlesex, Mercer, and Morris Counties, N. J., 1925. New Jersey Extension Bulletin 50, Local Leadership and the Effectiveness of Extension in Reaching Rural People. - H. J. Baker and M. C. Wilson.

Considering the nature of dairy practices as compared to other subject-matter lines and the emphasis placed on dairy-club work in the areas included in the dairy study, the results of these two studies are about as consistent as could be expected.

Table 8. - Comparison between dairying and all lines of agriculture

Method	313 practices related to dairying	860 practices all phases agriculture/1
Method demonstration.....	0.9	11.4
Adult result demonstration.....	1.4	17.6
Junior result demonstration.....	11.7	5.2
General meeting.....	32.9	11.3
News story	5.6	18.8
Bulletin.....	22.1	18.8
Circular letter.....	2.3	9.8
Exhibit.....	1.9	1.5
Farm visit.....	40.8	39.0
Office call.....	5.2	4.8
Correspondence.....	---	6.9
Leader-training meeting.....	---	---
Telephone call.....	---	1.7
Indirect.....	26.8	22.9

/1 The adoption of a single practice may have resulted from the influence of several extension methods.

EXPOSURES AND TAKES

In the foregoing discussion of the effectiveness of methods in influencing the adoption of improved dairy practices, the relative emphasis as placed upon the different extension methods by extension workers has not been considered. To throw light on this problem, information was obtained from dairymen regarding the different means and agencies employed in dairy extension to which they had been exposed. If a dairy farmer had seen an extension dairy exhibit or had had a visit from an extension agent to discuss dairy problems, this fact was noted on the record. The farmers interviewed also stated from which of the teaching methods to which they were exposed, information was obtained that was actually used in modifying their dairy practices.

Column 1, table 9, gives the percentage of farmers exposed to the different dairy extension methods. Column 2 of the same table shows the percentages of those exposed to the various methods who were influenced by them to adopt improved dairy practices. Approximately 1 farmer out of 2 reached through farm visits, general meetings, and indirectly, was influenced by those methods. This was true of but 1 farmer out of 4 reached by office calls, bulletins, and result demonstrations. Out of 34 farmers

seeing dairy extension exhibits, but 1 obtained information from exhibits that was used. In the case of circular letters this proportion is 1 out of 23, and news stories 1 out of 13. Possibly the character of the dairy exhibits, news stories, and circular letters has not been such as to carry the extension message, or dairy subject matter may not lend itself satisfactorily to the use of these methods. The question whether farmers go to places where exhibits are made for the purpose of obtaining subject-matter information or for entertainment might also be raised.

Table 9. - Comparative effectiveness of extension methods, dairy project
(Adult and junior extension combined)

Method	Dairy farmers exposed to methods	Those exposed influenced	All farmers influenced by methods
	Percent	Percent	Percent
Method demonstration..	23.4	4.4	1.0
Result demonstration..	33.3	25.0	8.3
General meeting.....	52.6	42.6	22.4
News story.....	68.2	7.6	5.2
Bulletin.....	66.7	28.1	18.7
Circular letter.....	59.9	4.3	2.6
Exhibit.....	70.8	2.9	2.1
Farm visit.....	58.3	45.5	26.6
Office call.....	19.8	26.3	5.2
Correspondence.....	22.4	---	---
Leader training.....	3.1	---	---
Telephone.....	8.3	---	---
Indirect.....	41.1	51.9	21.4
Total all methods...	91.7	63.6	58.3

The percentages of all farmers influenced by the various methods are given in column 3. Considering the exposures, and the percentages of exposures which took, the methods that stand out as having effectively reached farmers are, farm visits, general meetings, indirect, and bulletins. Exhibits that were seen by more people than received bulletins had only one-ninth the influence of bulletins owing to a lower degree of effectiveness. The relationship of "exposures" and "takes" is forcefully brought out in figure 1.

Dairy and Alfalfa Projects Compared

The only other data with which to compare the information on exposures and takes in the dairy project are from a similar study of the alfalfa project in Wisconsin in 1925/5. As would naturally be expected,

/5 Wilson, M. C. and Clark, W. W. Make Extension More Effective. Bull. 387. Wis. Agr. Col. Ext., Madison.

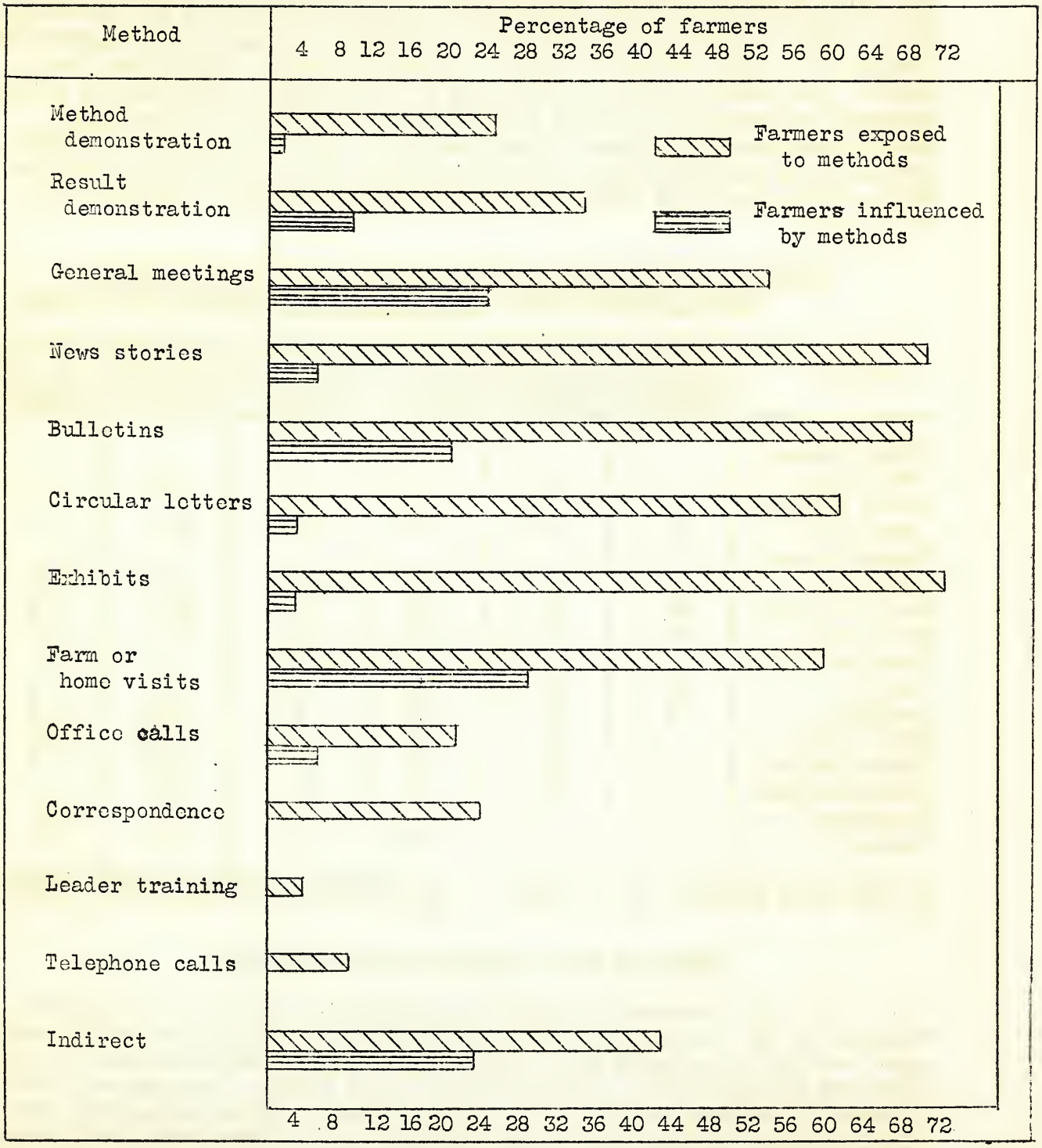

Figure 1. - Comparative effectiveness of extension methods, dairy project, 192 dairy farmers, New Jersey, 1926.

the percentages of farmers exposed to the various methods used in alfalfa and dairy extension varied widely owing to differences in subject matter and the emphasis placed upon different extension methods in the two States (table 10). However, the proportion of exposures which took is remarkably similar in a large number of cases. General meetings, bulletins, farm visits, and indirect seem to have been of about equal effectiveness whether employed in forwarding alfalfa in Wisconsin or dairying in New Jersey. Method demonstrations, result demonstrations, news stories, and circular letters were less effective in dairy extension than in alfalfa extension. Office calls were more effective. Exhibits were equally ineffective in both cases.

Table 10. - Comparative effectiveness of extension methods
Dairy project, New Jersey/1 - Alfalfa project, Wisconsin/2

Method	Percentage farmers exposed to methods		Percentage exposed who were influenced		Percentage farmers influenced by method	
	Alfalfa	Dairy	Alfalfa	Dairy	Alfalfa	Dairy
Method demonstrations.....	3	23	17	4	0.5	1
Result demonstrations.....	16	33	61	25	10	8
General meetings.....	70	53	75	43	52	22
News stories...	60	68	44	8	26	5
Bulletins.....	40	67	37	28	15	19
Circular letters.....	24	60	20	4	5	3
Exhibits.....	5	71	5	3	0.2	2
Farm visits...	8	58	46	46	4	27
Office calls..	5	20	13	26	0.6	5
Correspondence	6	22	8	--	0.5	--
Telephone.....	1	8	--	--	--	--
Indirect.....	40	41	56	52	22	21

/1 192 dairy farmers, N. J., 1926. /2 424 alfalfa growers, Wis., 1925.

Adult and Junior Extension Work Compared

It is of interest to compare the methods on the basis of whether employed by the club agent working primarily with juniors, or by the county agent working principally with adults (table 11). Farm visits are equally effective whether made by county agent or club agent. This was also true of general meetings, news stories, and indirect. Office calls were more effective when related to adult extension. On the other hand, result demonstrations seem to have been more effective when conducted by boys and girls under the direction of the club agent than when conducted by farmers under the direction of the county agent. When all extension methods were considered, about the same number of farmers were exposed to adult and junior

extension activities. Adult extension methods were approximately 40 percent more effective, however, than the same methods when employed in junior extension.

In this study no attempt has been made to determine the relative cost of the various extension methods and of club agent work as compared to county agent work. The question of costs is an important one and one which should be considered in further studies dealing with the comparative efficiency of the means and agencies employed in extension teaching.

Table 11. - Comparision of extension methods - adult extension versus junior extension

Method	Percentage of dairy farmers exposed to method		Percentage of those exposed influenced		Percentage of all farmers influenced by method	
	Adult extension	Junior extension	Adult extension	Junior extension	Adult extension	Junior extension
Method demonstration.....	12.5	22.9	---	4.5	---	1.0
Result demonstration.....	15.1	29.7	13.8	24.6	2.1	7.3
General meeting.	39.6	38.0	35.5	35.6	14.1	13.5
News story.....	58.9	44.8	8.0	6.9	4.7	3.1
Bulletin.....	64.1	18.7	29.3	---	18.7	---
Circular letter.	54.7	26.0	4.8	---	2.6	---
Exhibit.....	33.9	67.7	---	3.1	---	2.1
Farm visit.....	48.4	43.7	41.9	35.7	20.3	15.6
Office call.....	18.2	12.0	25.7	4.3	4.7	0.5
Correspondence..	18.7	13.5	---	---	---	---
Leader training.	1.6	3.1	---	---	---	---
Telephone call..	6.2	6.8	---	---	---	---
Indirect.....	33.3	25.0	50.0	35.4	16.7	8.8
Total all methods.....	84.9	79.7	57.7	41.8	49.0	33.3

OTHER AGENCIES RELIED UPON FOR ASSISTANCE

Among the various agencies other than extension relied upon for information and assistance with dairy problems farm papers stand at the head of the list with 57 percent of the dairymen involved. Although a goodly number of both local and national papers were reported, the papers most commonly mentioned were those published nearby. Assistance from milk dealers, neighbors, feed dealers, cooperative marketing associations, and salesmen of farm supplies was also reported, but in no case were more than 3 percent of the farmers involved.

DAIRY-CLUB MEMBERS

The 78 present and former dairy-club members found on the 192 farms studied came from 30 homes: 56 boys and 22 girls. All but 4 of the boys owned dairy animals at the time the data were collected. A total of 133 animals were owned by these 74 boys and girls. The growth in membership in dairy clubs is shown by figure 2. Starting with 4 club members in 1918, the number has steadily increased until in 1926 there were 63. The average age of the 1926 club members was between 16 and 17 years, the youngest being 9, and the oldest 28 years. Approximately 40 percent of the 1926 club members were not in school. The average length of time dairy projects have been carried on is 3.8 years, considering former as well as present club members.

More than half of the dairy-club members were enrolled through the efforts of the club agent (table 12). About one-sixth each were obtained by the volunteer club leader, or joined because a brother was already in a dairy club. The remainder enrolled as the result of discussion at school and suggestions by neighbors, or through news items regarding club work carried in the local press.

Table 12. - How influenced to join clubs

Agency	Number club members reporting	Percentage of all club members
Club agent	41	52.6
Local leader	14	17.9
Brother	12	15.4
School	3	3.8
Neighbor	2	2.6
News item	2	2.6
No record	4	5.1

Phases of Dairying Emphasized

Although all dairy-club members were given some instruction in nearly all phases of dairying, certain phases were emphasized more in some clubs than in others. In addition, the interest of the individual club member naturally affected the part taken in the various dairy activities. According to the information furnished by club members themselves (table 13), the keeping of records and the feeding of the dairy animals received greatest attention. Care and management of calves, breeding, learning to test milk for butterfat content, and showing in competition were other phases of dairying that received much emphasis.

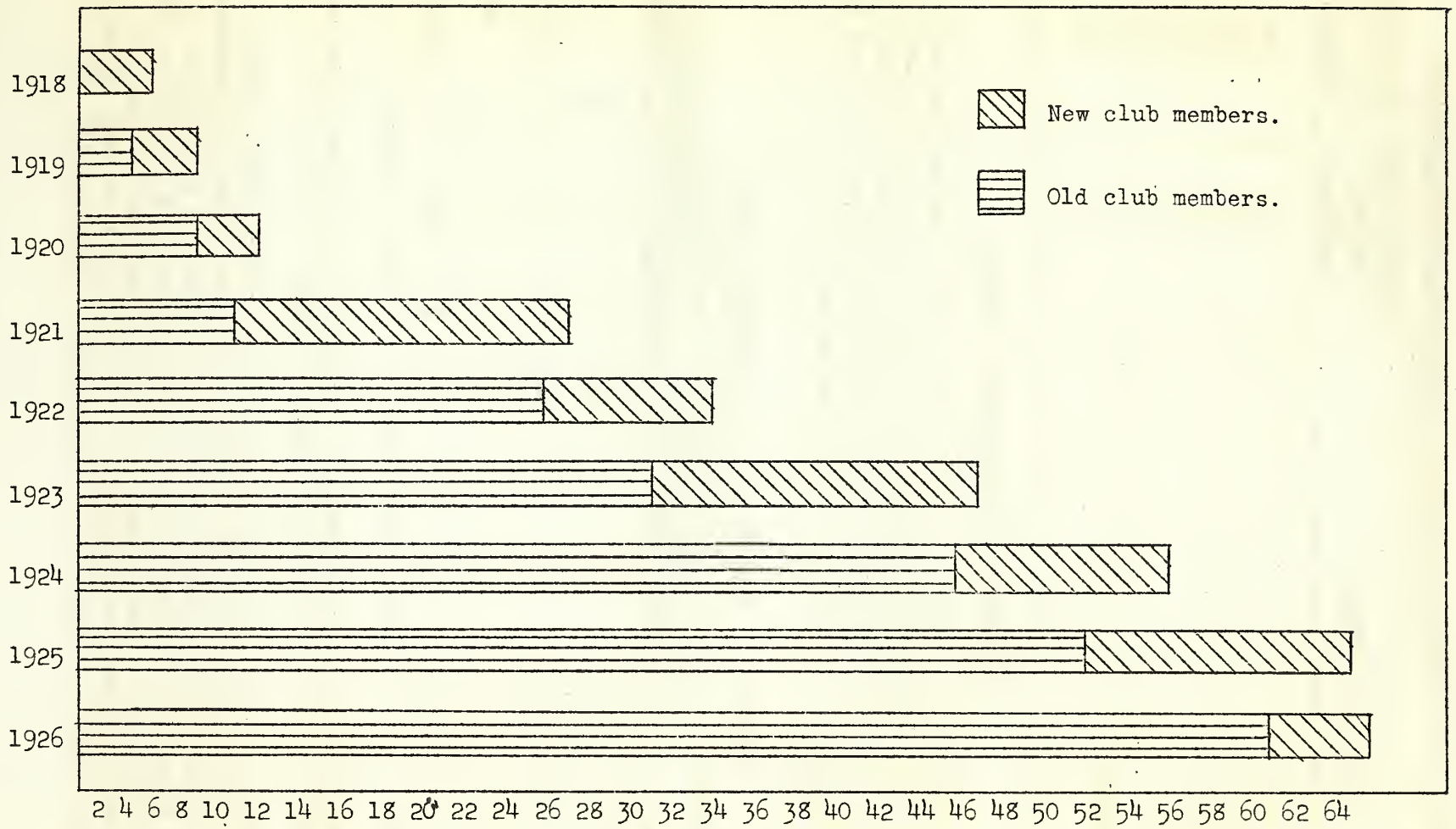

Figure 2 - Growth in dairy-club membership.

Table 13. - Phases of dairying emphasized by club members

Phase of dairying	Number club members reporting	Percentage of all club members
Dairy records	34	43.6
Feeding	32	41.0
Calf rearing	16	20.5
Breeding	13	16.7
Testing milk	10	12.8
Showing	8	10.3
Growing legumes	6	7.7
Judging	2	2.6

Exhibits and Demonstration Teams

As indicated in table 14, 64 percent of the club members had exhibited their dairy animals locally, 38 percent at some county-wide event, and 22 percent in State-wide competition. More than 1 club member out of 4 had been a member of a dairy demonstration team, 9 percent demonstrating locally, 14 percent at a county-wide activity, and 9 percent at a State activity.

Table 14. - Exhibits and demonstration teams

	Exhibits made		Demonstration teams	
	Number members	Percentage	Number members	Percentage
Local	50	64.1	7	9.0
County	30	38.4	11	14.1
State	17	21.8	7	9.0
Any	66	84.6	22	28.2

Responsibility for directing the affairs of the dairy clubs had been participated in by 18 of the 78 club members.

The club members interviewed were asked to state the features about dairy-club work that they liked and disliked. The dislikes were so few in number and but one or two of a kind that the information is of little value. The things that the club members said they liked about dairy-club work are listed in table 15. Exhibiting dairy animals in competition heads the list followed by social activities such as meetings and tours. Learning how to care for and manage dairy animals, and the

keeping of records were also frequently mentioned. The young dairy calves made a strong appeal to 6 percent of the members.

Table 15. - What members like about dairy-club work

	Number club members reporting	Percentage all club members
Showing animals.....	28	35.9
Meetings and tours.....	17	21.8
Dairy information.....	14	17.9
Record keeping.....	10	12.8
Young animals.....	5	6.4

SUMMARY

The study included 192 dairy farms and 78 junior dairy-club members in four New Jersey communities.

The average number of dairy animals kept was 12.8. About one-fourth of the dairy animals were purebred, being reported on 46.4 percent of the farms.

One dairyman in seven keeps records of production of his cows. Three dairymen in five have their herds tested for tuberculosis. Approximately four-fifths of the dairy farmers grow leguminous roughages but one dairyman in eight has a silo.

Concrete floors were found in more than half of the dairy barns. Individual drinking cups were found in 10 percent of them.

That Extension had influenced the adoption of improved dairy practices was reported by 58.3 percent of the farmers interviewed.

The chief extension methods responsible for the adoption of the improved dairy practices were farm visits, general meetings, indirect spread of influence, bulletins, and result demonstrations.

Nearly 50 percent of the farmers having farm visits, attending general meetings, or talking with neighbors who had adopted improved practices, reported the practical use of the dairy information obtained in these ways. This was true of approximately 25 percent of the dairymen receiving bulletins, making office calls, or visiting result demonstrations in dairying.

Though more farmers saw dairy exhibits than received dairy bulletins, yet nine times as many farms reported helpful information derived from bulletins as reported use of information obtained from exhibits.

Approximately the same percentage of farmers were exposed to adult and junior extension methods, but only two-thirds as many farmers were influenced by junior extension as by adult extension.

Of the 78 boys and girls ever in dairy-club work, 74 reported a total of 133 dairy animals owned by them.

The county club agents, local leaders, and other club members were largely responsible for the enrollment in dairy clubs.

Four out of 5 club members had exhibited dairy animals in competition; more than 1 out of 4 had been a member of a demonstration team; and nearly 1 out of 5 had held a club office.

Showing animals in competition, participating in club meetings and tours, knowledge of dairying acquired, and training in record keeping were the features of club work most liked by the dairy-club members.

A
No._____Co._____ STUDY OF DAIRY PROJECT Date _____

Name _____P. O. Address_____Community _____
Owner_____Tenant_____No. children (10-20 yrs) Boys_____Girls_____
Improved dairy practices followed
Number of dairy animals kept _____No. purebred_____
Years used purebred sire_____Number calves raised yearly_____
Leguminous roughages grown: Kind_____No. Years _____
_____ Kind_____No. Years _____
Are production records kept on milking cows?_____
For how many years?_____How_____
Are cows fed grain according to production?_____No. years_____
Has herd been tested for tuberculosis?_____Year first tested_____
Approved equipment used: Silo_____Concrete floor_____Drinking cups_____
Bull pen_____Veltilating system_____Litter carrier_____
Light (4 sq. ft. per animal)_____Stanchions_____
Member of what dairy organizations (breed, marketing, etc.)_____

_____
Extension services of the New Jersey State College of Agriculture and of the United States Department of Agriculture cooperating.

Fig. 3-A Obverse side of questionnaire card used in interviewing dairy farmers.

Check extension activities relating to dairying attended, or personal contacts with extension workers regarding dairying:-

	Adult (a)	Junior (jr)		Adult (a)	Junior (jr)
Result demonstrations (dem)	_____	_____	Office calls(o.c.)	_____	_____
Mothod demonst. mtgs. (m.dem.)	_____	_____	Correspondence(cor.)	_____	_____
			Telephone calls(tel.)	_____	_____
Leader-training mtg.(l.tr.)	_____	_____	Bulletins (bul.)	_____	_____
General meetings (mtg.)	_____	_____	Circular letters(cir.l.)	_____	_____
Exhibits (exh.)	_____	_____	News stories (n.s.)	_____	_____
Farm visits (f.v.)	_____	_____	Indirect (ind)	_____	_____

Leadership in dairy extension: Adult_____Junior_____
Dairy extension activities on farm: Adult_____Junior_____
List dairy practices adopted which were in any way due to influence of extension

Practices	Extension methods involved	Ext. Agts. involved			Local leader involved
		C. A.	Club A.	Spec'l	

What agencies other than extension do you rely upon for assistance with dairy problems?_____
Other dairy problems with which assistance is desired_____
How has dairy extension benefitted the community_____
Remarks_____

Fig. 3-B Reverse side of questionnaire card used in interviewing dairy farmers.

B Information Concerning Boys and Girls Who Have Conducted a Junior Dairy Project

Farm No._____ Co._____ Date_____

Name of parent_____	Address_____	Community_____
Name of club member - - - - - - - - -		
Present age - - - - - - - - - - - - -		
In school - - - - - - - - - - - - - -		
Calendar years in dairy clubs - - -		
Phase of dairying emphasized - - -		
How influenced to join a dairy club		
Why did you drop out? - - - - - - -		
Number animals now owned- - - - - -		
Office held in club, with years - -		
Exhibits made and prizes won:		
Local - - - - - - - - - - -		
County- - - - - - - - - - -		
State - - - - - - - - - - -		
Member of a demonstration team:		
Local - - - - - - - - - - -		
County- - - - - - - - - - -		
State - - - - - - - - - - -		

Fig. 4-A. Obverse side of questionnaire card used in interviewing dairy-club memb

What changes in dairying have been made on farm as outgrowth of dairy club work_____		
How has dairy-club work improved dairying on neighboring farms_____		
What do you like about dairy-club work?_____		
What do you dislike about dairy-club work?_____		
Suggestions for the improvement of dairy-club work_____		
Remarks_____		

Extension services of the New Jersey State College of Agriculture and of the United States Department of Agriculture cooperating.

Fig. 4-B. Reverse side of questionnaire card used in interviewing dairy-club memb

Extension Service Circular 64 November 1927

Effectiveness of Dairy Extension

A Study of 192 Dairy Farms in Mercer, Hunterdon, and Warren Counties, N. J., 1926

M. C. Wilson and A. M. Hulbert

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